



June 12, 2001

Mr. William F. Lowe
RCRA Corrective Action & Permits Branch
Air, RCRA and Toxics Division
U.S. Environmental Protection Agency
Region VII
901 North 5th Street
Kansas City, Kansas 66101

Re: RCRA Facility Investigation (RFI) Phase II Work Plan
Safety-Kleen (Wichita), Inc. Facility
2549 North New York Avenue
Wichita, Kansas 67219
EPA Identification No. KSD007246846

Dear Mr. Lowe:

Enclosed with this letter is a copy of the proposed *RCRA Facility Investigation (RFI) Phase II Work Plan* for the Safety-Kleen (Wichita), Inc. (SKW) facility in Wichita, Kansas. This document has been prepared by Safety-Kleen Consulting, Inc. on behalf of SKW. The Work Plan is submitted in accordance with the schedule described in our letter of March 30, 2001.

If you have any questions or comments, please contact Ms. Tauscher at (303) 938-5535.

Sincerely,

Kay L. Tauscher, C.P.G.
Project Manager

Brian Martinek, P.G.
Senior Project Manager

Enclosure

Cc: Ms. Christine R. Jump, KDHE
Mr. Geoff Jones, S-K, Columbia, SC
Mr. John Arbuthnot, S-K, Baton Rouge, LA
Mr. Ron Robertson, S-K, Wichita, KS
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Document(s) Enclosed: Phase III RFI Work Plan

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Project / Phase Number: 1205 SK Wichita

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**RCRA FACILITY INVESTIGATION (RFI)
PHASE III WORK PLAN
SAFETY-KLEEN (WICHITA) FACILITY
WICHITA, KANSAS**

PREPARED BY:



CAMERON-COLE

5777 CENTRAL AVENUE, SUITE 100
BOULDER, COLORADO 80301

JULY 18, 2002



July 18, 2002

Mr. William Lowe
U.S. Environmental Protection Agency
Region VII
901 North 5th Street
Kansas City, Kansas 66101

RE: Safety-Kleen Wichita Facility
2549 New York St., Wichita, Kansas
EPA Identification No. KSD007246846

Dear Mr. Lowe:

On behalf of Safety-Kleen (Wichita), Inc., Cameron-Cole, LLC has reviewed the comments to the RCRA Facility Investigation (RFI) Phase III Work in your letter dated June 28, 2002 and developed the following responses.

1. Response to reply 1, B.

EPA/KDHE are disappointed that S-K has chosen not to use a mobile laboratory for real time analysis in the field. Your preference for use of a fixed lab is however accepted. S-K should note that depending on the outcome of this last phase of the RFI field work, additional sampling will very likely be required to provide sufficient information in the Corrective Measures Study Report (CMS) to evaluate costs for various remedial options.

Response: *Safety-Kleen understands that depending on the results of this Phase III RFI Work, additional sampling may be required to provide sufficient information in the Corrective Measures Study (CMS) process.*

2. Response to reply 3.

Since soil boring B-70 had detections of contaminants above levels that are likely to leach to groundwater and proposed location B-99 is in an upgradient position relative to B-70, B-99 can also

prove useful for helping define the extent of the plume in that area. S-K should collect a groundwater sample from B-99.

Response: Safety-Kleen will collect a groundwater sample using Geoprobe® equipment from B-99 for testing of volatile organic compounds (VOCs).

3. Response to reply 4.

Since S-K will have to wait for analytical results from a fixed lab, S-K will have no real time basis for determining how many of the 5 potential locations will need to be sampled. To avoid potential remobilization, all of the five proposed locations should be sampled and a shallow groundwater sample should be collected from at least B-96, B-100, and B-103.

Response: Safety-Kleen intends to sample all five additional locations for both soil and groundwater, as indicated on the revised Figure 4 attached to our May 24, 2002 letter (B-96, B-100, B-101, B-102, and B-103). The term "proposed" was only used to indicate that these sampling locations had not yet been approved by the agencies; it was not intended to imply that only some of these borings would be advanced.

4. Response to reply 6 and Table 5.

EPA and KDHE appreciate your efforts to avoid collecting soil samples below the water table and would like to suggest that it may be preferable to use changes in lithology from fine-grained to coarse-grained material as a more telling characterization. In the sand zone, there is probably insufficient organic matter and/or fine grained sediments to keep contaminants from "washing" through this zone, leaving few contaminants bound to the sand particles. The Agencies preference would be to collect a shallow sample and a sample of fine-grained material at the contact with the cleaner sand. Regardless of the sampling rationale, the plan must make it clear that at least two samples will be collected from each location.

Response: The work plan now indicates that each boring location intended for soil sampling and VOC analysis will have at least two soil samples collected for analysis. One sample (referred to as "Sample #2" herein) will be collected from the lower 2 feet of the deepest fine-grained material (i.e., silt, clay or clayey/silty sand) in the vadose zone. Additionally, the sample with the highest OVM reading collected above the depth of "Sample #2" will also be collected for analysis of VOCs (referred to herein as "Sample #1"). If no organic vapors are detected with a field instrument in the soil above Sample #2, then a sample depth will be selected by the field geologist for Sample #1 based upon other observations, such as odor, appearance and/or lithology. This sample will be collected in the upper 5 feet of soil. The field geologist will make notes in the log book during sampling indicating the rationale for each sample collected for analysis.

Mr. William Lowe
U.S.E.P.A.
July 18, 2002
Page 3 of 3

5. Response to comment 10.

B-68 is apparently on the up gradient edge of the B-21 source area, and SK-5 is on the lateral edge of the plume emanating from the B-21 source area. There is no well to monitor concentrations at the source. EPA and KDHE will not require installation of a well during the Phase 3 field work; however, as part of the RFI and CMS reviews, existing monitoring locations will be evaluated with regards to source areas, ground water gradients, contaminant plume axes, site boundaries, and ultimately, the selected remedy. Additional wells may be required as part of the long term monitoring requirements. The final monitoring network will be established as part of the Corrective Measure.

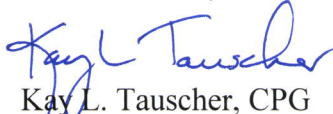
Response: *Safety-Kleen understands that the monitoring system will be evaluated and possibly modified as part of the CMS process.*

6. EPA and KDHE agree that going ahead with the on-site work is appropriate and re-state our position that the RFI report should follow closely upon your receipt of the analytical data from Phase III. The revised workplan must include a schedule for completing the fieldwork, receiving data, and submitting a draft RFI Report in accordance with the Permit.

Response: *Figure 9 of the Phase III RFI Work Plan provides a schedule in number of weeks based upon final approval of the Work Plan. This schedule is still valid, as far as Safety-Kleen is concerned.*

Enclosed are pages to replace the previous versions in your existing work plan. We ask that you exchange the appropriate pages with these new versions. If you have any questions on the matter, please contact us at (303) 938-5500.

Sincerely,
Cameron-Cole, LLC


Kay L. Tauscher, CPG
Project Manager


for Brian Martinek
Senior Project Manager

Enclosures:
Revised Work Plan Text
Revised Table 5
Revised Figures 2, 3 and 4
Revised boring logs for SK-4D, SK-10S, SK-11S, and B-53

**RCRA FACILITY INVESTIGATION (RFI)
PHASE III WORK PLAN
SAFETY-KLEEN (WICHITA) FACILITY
WICHITA, KANSAS**

Prepared by:



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JULY 18, 2002

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ABBREVIATIONS AND ACRONYMS

$\mu\text{g/kg}$	milligrams per kilogram
$\mu\text{g/L}$	milligrams per liter
AOC	Area of Concern
bgs	below ground surface
CDM	Camp Dresser & McKee
cis-DCE	cis-1,2-dichloroethene
DEHP	bis 2-ethylhexyl phthalate
GC/MS	gas chromatograph/mass spectrometer
KDHE	Kansas Department of Health and Environment
mg/kg	milligram per kilogram
NIC	North Industrial Corridor
PCE	tetrachloroethene
PQL	practical quantitation limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SK	Safety-Kleen (Wichita), Inc.
SOP	Standard Operating Procedures
SWMU	Solid Waste Management Unit
TCE	trichloroethene
UPRR	Union Pacific Railroad
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Chemical

1. INTRODUCTION

This Phase III Work Plan is being submitted in response to discussions between Safety-Kleen (Wichita), Inc. (SK), Cameron-Cole, LLC, the United States Environmental Protection Agency (USEPA), and the Kansas Department of Health and Environment (KDHE). In a teleconference on January 9, 2002 and as confirmed in our letter dated January 10, 2002, these parties agreed that additional fieldwork is required before the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) for the SK Wichita facility (Figure 1) can be completed. Therefore, this work plan presents the proposed scope of work for a Phase III program of work to be performed as part of the RFI. The work plan was prepared by Cameron-Cole on behalf of Safety-Kleen and is based upon the findings of previous site investigations that have taken place since November 1999. The draft Work Plan was submitted in February 2002, and comments were received in a letter from USEPA dated April 18, 2002. Cameron-Cole responded on behalf of Safety-Kleen in a letter on May 24, 2002. USEPA responded in another comment letter dated June 28, 2002. This final work plan addresses the comments made in those two USEPA response letters.

The Phase III program is a follow-up to work initiated with the revised Phase I RFI Work Plan dated October 14, 1999 and three supplemental stages of field work, which comprise the first two phases of the RFI. The Phase I Work Plan provides a complete description of investigation methodologies, standard operating procedures, and a revised quality assurance plan for the overall RFI. It was prepared in response to a letter from USEPA dated April 2, 1998 requesting the RFI. The Phase I Work Plan proposed a direct-push (or GeoProbe[®]) program of soil and groundwater sampling that was implemented at the site in Fall 1999. Figure 2 provides a site layout showing the initial Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs). These areas were the primary basis of the Phase I RFI sampling plan. Due to the close proximity of many of these locations, the SWMUs and AOCs were grouped together to facilitate an efficient sampling program. An initial addendum to the RFI Work Plan, dated April 4, 2000, presented a brief review of the subsurface findings of the Phase I work and presented a plan for installing a groundwater monitoring well network at the facility. The well installation and sampling was completed in October 2000. These initial field investigations have indicated impacts to soil and groundwater at the site of primarily volatile organic compounds (VOCs) and limited amounts of inorganic constituents. Appendix A provides the key tables and figures summarizing the data from the first phase of the RFI, which were also summarized in the Revised Phase II RFI Work Plan.

A second addendum to the Phase I work, comprised of letters dated February 16 and March 30, 2001, proposed that an additional round of samples be collected from on-site and upgradient monitoring wells, and surface water samples be collected in the East Fork of Chisolm Creek. This work was completed in April 2001, with the exception of the installation of the off-site, upgradient monitoring wells that have been delayed due to access negotiations with Union Pacific Railroad. The analytical results were submitted KDHE and the USEPA in a May 24, 2001 letter. SK is still working on obtaining access to

Union Pacific Railroad's (UPRR's) property for installation of the upgradient wells. SK is hopeful that an acceptable access agreement will be granted by UPRR prior to or during the implementation of the Phase III field effort. The locations of the four proposed upgradient wells were identified in e-mail correspondence with the agencies on April 24, 2001. They are described in the RFI Phase II Work Plan and can be found in the figures provided in Appendix A of this work plan.

The Phase II RFI Work Plan (dated August 31, 2001 and modified by a letter dated October 15, 2001) was implemented in November 2001 and included surface water sampling, along with subsurface soil and groundwater sampling. The findings of that field effort are presented within this work plan and provide the basis of the proposed work.

2. SOIL INVESTIGATION

2.1. EXISTING DATA REVIEW

As part of the initial field investigation identified in the Phase I RFI Work Plan, 44 soil borings were advanced with a GeoProbe® (i.e. direct-push method), logged and sampled at the SK Wichita facility in November 1999. The borings were placed according to the locations of SWMUs and AOCs on the site, and other areas identified as potential areas for impacts based on historical information available for the site. The scope of this investigation is described in the Phase I Work Plan. Soil samples from each boring were analyzed to assess whether historical activities impacted the site subsurface media.

The following areas of concern were identified for further assessment based on the results of the Phase I work: (1) south of Building C near the loading ramp; (2) south of the processing area; (3) south of the former paint can burial pit; (4) east of Buildings J and K; and, (5) between Buildings I and J along the rail spur.

In the Phase II RFI, soil samples were collected and analyzed in these five areas for both metals and VOCs. Thirty-four (34) soil samples were analyzed for RCRA metals (arsenic, barium, cadmium, lead, mercury, selenium and silver). The results of these analyses are provided in Table 1, and the analytical laboratory reports are provided in Appendix B. Of the samples collected in November 2001, only one sample had a lead concentration above 1,000 milligrams per kilograms (mg/kg): B-63 at 0.5 feet (1,020 mg/kg). Only two soil samples had significantly elevated lead concentrations in the Phase I RFI conducted in November 1999: B-16 at 3 feet (1,560 mg/kg) and B-40 at 4 inches (7,800 mg/kg). The other concentrations of RCRA metals observed are not believed to be unusually elevated for an industrial area, and are not believed to pose a significant threat to human health or the environment.

Fifty-five (55) soil samples (excluding duplicate samples) were collected and analyzed for VOCs by USEPA SW846 Method 8260. Table 2 lists all the VOC compounds tested for in this gas chromatograph/mass spectrometer (GC/MS) scan. Only those constituents identified above the detection limit in at least one sample are listed in Table 3 with the concentrations reported. Most of the detections consisted of chlorinated VOCs such as tetrachloroethene (PCE), trichloroethene (TCE), and cis-1,2-dichloroethene (cis-DCE). The highest VOC detection was PCE reported at 28,000 µg/kg in sample B-46 at 2 feet below ground surface (bgs). Additionally, concentrations of PCE were detected in sample B-76 at 4 feet (610 µg/kg) and 16 feet (5,800 µg/kg). PCE was also observed at higher concentrations in the northeastern corner of the site in B-70 at 8 feet (580 µg/kg), and B-63 at 11 feet (11,000 µg/kg). Other

concentrations of VOCs were observed across the site and can be reviewed in Table 3 and are shown on Figure 3. The VOCs detected were primarily within the areas previously identified as potential source areas.

A GC/MS scan for semi-volatile compounds was conducted on eight soil samples (excluding duplicate results) by USEPA Method 8270C. The results are summarized on Figure 3 and in Table 4. Only bis 2-ethylhexyl phthalate (DEHP) was observed in sample B-68 at 16 feet (630 µg/kg). DEHP was also observed in the Phase I RFI in this vicinity of the site in B-19 at 3 feet (9,400 µg/kg), and B-18 at 3 feet (1,000 µg/kg). Dimethyl phthalate was also observed in the Phase I RFI in sample B-19 at 3 feet (8,400 µg/kg). The area impacted by the phthalates appears to be limited in extent, occurs well below the ground surface, and concentrations are below levels that are considered harmful to human health or the environment.

2.2. SCOPE OF WORK

The following describes a proposed scope of work related to subsurface soil impacts at the SK Wichita facility. The proposed sampling points referenced below are shown on Figure 4. The Phase III RFI scope of work for soil is as follows:

- The extent of the adsorbed PCE south of Building C warrants further investigation to assess the lateral extent (refer to samples from B-45, B-46 and B-47) of the adsorbed plume. Three additional borings will be advanced (B-84 through B-86), and two soil samples per boring will be collected from the vadose zone and analyzed for VOCs by USEPA Method 8260B. The primary objective of this task is to assess the extent of the chlorinated VOC adsorbed plume. At this time, we anticipate that these samples will be analyzed in a short turn around time to assess whether up to three additional borings will be warranted in the general area. The area will be considered to be adequately assessed if the concentrations of chlorinated VOCs in soil samples are below the practical quantitation limits (PQLs) and no contingency borings will be advanced.
- The area around B-76, which lies adjacent to the southern property boundary, also warrants further investigation. Some of this work will require access from El Paso, who currently owns the former Coastal-Derby refinery. Cameron-Cole has initiated communications with El Paso in the hope of gaining access for any necessary sampling or Phase III RFI activities. Once the scope of work is finalized, the formal request for access will be made in writing to El Paso. Cameron-Cole proposes to advance three initial borings on El Paso's property (B-87, B-88, and B-89). One boring (B-98) will be place north of B-76. Two unsaturated soil samples will be collected from each boring and analyzed for VOCs by USEPA Method 8260B (see Table 5). The primary objective of this task is

to assess the extent of PCE-related chlorinated VOC impacts in the vadose zone. These samples will likely be analyzed on a quick turn around time to assess whether contingency borings are warranted. Three contingency borings (B-107, B-108, and B-109) will be advanced, if needed, to assess the extent of PCE impacts in the soil and groundwater. Concentrations of PCE and chlorinated VOCs less than the PQLs in the soil will be considered adequate for an estimate of the lateral extent.

- Three borings will be advanced outside of the eastern fenceline, west of New York Street (B-93, B-94 and B-95) to assess the lateral extent of VOC impacts in the shallow fill in the northeastern corner of the site.
- One boring (B-99) will be placed north of B-70 to assess the lateral extent of TCE and PCE impacts reported at 8 feet in B-70.
- Five borings (B-96, B-100, B-101, B-102 and B-103) will be drilled south of Building J. Soil and groundwater samples will be collected with the Geoprobe[®]. The purpose of these boring locations is to assess the possible source area for the VOCs observed in the groundwater sample B-79 in November 2002.
- One boring will be placed north of Building A (B-97) to assess the presence of VOCs in soil and groundwater in this area of the site and to address KDHE concerns.

This work will be conducted using GeoProbe[®] equipment and methods consistent with those previously used on site. Many of these borings will be advanced to the groundwater table for collection of water samples as described in Section 4.2.1. Each of the borings will be continuously sampled and logged in accordance with the Unified Soil Classification System. Table 5 lists each of the proposed boring locations, sampling depths and analytical parameters, and indicates which borings will also be utilized for collection of groundwater samples. All soil boring and sampling procedures will follow those described in Section 5 and Appendix G of the SK Phase I RFI Work Plan dated October 19, 1999.

3. SURFACE WATER INVESTIGATION

3.1. EXISTING DATA REVIEW

Five surface water samples were collected from the East Fork of Chisolm Creek in April 2001 and November 2001 (Figure 5). Chisolm Creek flows from north to south and is located just east of the facility. The five surface water samples were collected to assess whether groundwater impacts at the SK Wichita facility may affect surface water quality in Chisolm Creek. The results of the recent surface water sampling event are summarized in Table 6.

The East Fork of Chisolm Creek is concrete lined in places, but the length of creek that was sampled near the facility was unlined. The sample that was collected furthest upstream of the SK facility, and hydraulically upgradient with respect to the direction of groundwater flow (SK-SW-5), had no detections in November 2001. However, in April 2001, SK-SW-5 had the highest concentration of TCE at 4.7 micrograms per liter ($\mu\text{g/L}$).

During November 2001, the sample collected at SK-SW-4 also had no detections. Very low concentrations of chlorinated VOCs were reported in samples SK-SW-3 and SK-SW-1. Sample SK-SW-2 had seven VOC detections ranging from 1.1 $\mu\text{g/L}$ to 23 $\mu\text{g/L}$.

The two sets of sampling results vary considerably. The results from April 2001 suggest an upstream TCE source area; however, the November 2001 analytical results do not. Additionally, data were collected in November 2001 to assess the relationship of the groundwater below the site with Chisolm Creek. The interpreted potentiometric map, including surveyed surface water elevations, is provided in Figure 6. The data suggest that the groundwater that flows beneath the SK facility is likely in hydraulic contact with the creek and therefore, may discharge potentially impacted groundwater to the surface water body at given times throughout the year. This hydraulic data, combined with the surface water sampling results suggest that impacted groundwater is likely flowing into Chisolm Creek east of the SK facility.

3.2. SCOPE OF WORK

At least two additional surface water sampling events will be conducted in locations as close to the original five sampling points as possible. The initial event will be conducted during the drilling program. The second event will be conducted at least one month after completion of the drilling program, but prior to completion of the RFI. The samples will be analyzed for VOCs using USEPA Method 8260B. The surface water elevations will be measured during each sampling event at sampling points SK-SW-2, 3 and 4 to provide ongoing stream elevation data.

4. GROUNDWATER INVESTIGATION

4.1. EXISTING DATA REVIEW

4.1.1. SITE GEOLOGY AND GROUNDWATER FLOW

A total of fourteen on-site monitoring wells are located on the SK Wichita facility (Figure 2). Geologic information collected during the RFI indicates that the site is underlain by 10 to 17 feet of gravelly clay (including fill material), underlain by approximately 18 feet of sand. A clay lens, 2 to 6 feet thick, intersects the sand on the eastern portion of the site. It pinches out in the southwestern corner of the site. One to nine feet of weathered bedrock underlie the base of the sand unit. Bedrock beneath the site is the Wellington Shale, which is encountered at depths ranging from 35 to 40 feet bgs. The water table generally occurs at about 13 to 17 feet bgs.

Of the 14 on-site monitoring wells, seven are shallow wells (SK-1S through SK-6S and SK-B68) screened across the water table and extending into approximately the upper seven feet of the aquifer. Wells HRI-03 and RSCI-1 are fully penetrating wells that were installed prior to the RFI work. The five deep wells (SK-1D, SK-2D, SK-3D, SK-4D and SK-5D) are screened over approximately the lower five feet of the unconsolidated aquifer, just above the Wellington Shale. Well pairs SK-3S/D, SK-4S/D and SK-5S/D were positioned in locations near or downgradient of areas believed to be potential source areas of historic groundwater impacts. In addition, the SK-3S/D well pair replaced an older well, HRI-02, which was abandoned due to the nature of its construction. The well pairs SK-1S/D, SK-2S/D, and SK-4S/D were installed in downgradient locations to monitor the groundwater quality migrating off-site. The shallow well (SK-6S) was positioned to help evaluate potential impacts from historical site activities in the northeastern portion of the site. Survey coordinates and elevations for the existing wells are listed in Table 7, along with the gauging data. Well logs are included in Appendix C.

Two additional offsite shallow wells (SK-10S and SK-11S) were installed east and downgradient of the site, between the facility and Chisolm Creek (Figure 6). These wells are located on City property and were added to the monitoring well sampling and gauging activities in November 2001.

Water levels were measured in the on-site wells, the two downgradient offsite wells, and four UPRR wells (MW-10, MW-11, MW-14, and WND-32) within a 24-hour period on November 11 and 12, 2001. The shallow water level data (excluding the fully penetrating wells) were used to produce the contoured groundwater elevation map presented on Figure 6. The groundwater flow direction across the site is to the

southeast with a gradient of about 0.0025 ft/ft. The groundwater elevation, flow direction and gradient are consistent with the more regional potentiometric surface map produced by Camp Dresser & McKee (CDM) in March 2001 (CDM 2001) as part of the North Industrial Corridor (NIC) investigation, and previous maps generated from data collected on the SK facility.

4.1.2. SITE GROUNDWATER QUALITY CONDITIONS

Groundwater samples were recently collected and analyzed from the on-site monitoring wells and selected upgradient wells in November 2001. Analytical data from these sampling events are presented in Tables 8 and 9, and analytical results for the organic constituents are presented on Figure 7.

The available data indicate that both shallow and deep groundwater beneath the site is impacted by VOCs. The constituents in the shallow portion of the unconsolidated aquifer appear to reflect impacts to groundwater associated with releases from the SK site, as identified in the soil quality results. However, the nature of the impacts in the deeper groundwater is distinct from those in the shallow. The suite of VOCs detected in the deep portion of the aquifer is distinctly different than the suite detected in shallow wells. This suggests that the downward migration of constituents from onsite sources is likely limited by the clay lens. Moreover, the occurrence of TCE and cis-DCE in monitoring wells upgradient of the site (CDM, 2000) suggests an upgradient source as the explanation for these constituents in the deep wells at the site. A more complete evaluation of these data is pending the collection and analysis of groundwater samples from monitoring wells proposed on Union Pacific Railroad property immediately north of the site and will be presented in the RFI report. (As previously described, the installation of these wells has been delayed due to property access negotiations.)

Groundwater data collected using temporary GeoProbe® points are presented in Table 10 and shown on Figure 8. Samples collected at the groundwater surface in B-45, 46 and 47 primarily contained concentrations of PCE, TCA and TCE. PCE was detected at 1,300 µg/L in B-46, which is the boring where the highest PCE concentration in soil was detected. Sample B-50, south of the Hot Rooms in Building D, also contained concentrations of PCE, cis-DCE, TCE and TCA at concentrations up to 1,700 µg/L. Elevated concentrations of PCE (160 and 490 µg/L) were observed in groundwater samples B-78 and B-79, respectively, which may suggest a potential nearby ongoing source area. Although other sample points contain detections of VOCs, none appear to indicate additional areas of concern.

4.2. SCOPE OF WORK

4.2.1. GEOPROBE® GROUNDWATER SAMPLING

To further assess possible localized areas of shallow subsurface impacts onsite, GeoProbe® points will be advanced into the uppermost groundwater in the shallow alluvial aquifer in select locations. Sample collection methods will minimize potential cross-contamination from the soils above. These samples may not be reproducible due to the method of collection, but they are intended for use as a screening tool for gross estimates of the presence or absence of dissolved impacts to the alluvial aquifer. Samples will be collected in this manner from the following sample points as indicated on Figure 4.

The borings placed south of the loading dock of Building C (B-84 through B-86), including any contingency borings drilled, will be advanced into the groundwater surface, and groundwater samples will be collected using the same methods used previously in November 2001. Once an access agreement has been obtained, the three initial borings drilled south of B-76 (B-87 through B-89 on El Paso's property) and any contingency borings drilled will have groundwater samples collected near the groundwater surface. Two additional GeoProbe® borings (B-90 and B-91) will be advanced between the SK-3 and SK-4 well pairs to assess the extent of groundwater impacts downgradient of the loading dock of Building C. Three additional points (B-93, B-94 and B-95) will be advanced outside of the property fenceline along New York Avenue to assess potential impacts of chlorinated VOCs in the shallow groundwater east of the northeastern corner of the site. Water samples will also be collected in borings B-96, B-100, B-101, B-102 and B-103 south of Building J to assess this area as a potential source area for concentrations of chlorinated solvents previously observed in B-79. Another groundwater sample will be obtained from boring B-97, north of Building A, to assess the extent of impacts observed in samples B-21 and B-50. A GeoProbe® groundwater sample will also be collected from B-99 north of B-70 in the northeastern corner of the site for VOC analysis. The groundwater samples from each of these areas will be submitted to the analytical laboratory for analysis of VOCs by Method 8260B. Table 5 outlines the borings, the sample types and depths, and the analytical parameters to be tested in each sample.

4.2.2. NEW WELL INSTALLATION

One new monitoring well (SK-B92) will be completed as a shallow well near the former B-46, south of the loading dock of Building C. The well will be 1-inch, flush-mounted in diameter and installed similar to the GeoProbe® well installed at SK-B68. The total depth of this well will be approximately 20-25 feet bgs.

Proposed upgradient well locations on Union Pacific Railroad property are provided in Appendix A, on Figure 6 from the Phase II RFI Work Plan. CC proposes to install three additional deep upgradient wells (SK-7D, SK-8D, and SK-9D) and one additional shallow upgradient well (SK-8S) to monitor groundwater before it reaches the SK facility. The installation of the wells is contingent on completion of an access agreement with UPRR, which is currently under negotiation.

The locations of these wells were chosen to create well pairs with the existing UPRR shallow upgradient monitoring wells. The wells will be installed, developed, purged and sampled according to the protocols described in the Phase I RFI Work Plan dated October 1999, including the standard operating procedures (SOP) outlined in Appendix G.

4.2.3. MONITORING WELL SAMPLING

Upon completion of the new monitoring wells, a full round of gauging and sampling will occur. The field methods to be utilized are described in the approved Phase I Work Plan and Addendum. The samples will be analyzed for the same parameters as the October 2000 and the April 2001 sampling events. The approved QA/QC procedures, methods, SOPs, and percentages are provided in the previous Phase I Work Plan and Addendum. The analytical parameters for groundwater testing are restated below:

- VOCs
- Methane and Dissolved gases
- Total and Dissolved Iron
- Total Nitrogen
- Total and Dissolved Manganese
- Dissolved Calcium
- Dissolved Magnesium
- Dissolved Potassium
- Dissolved Chloride
- Dissolved Bicarbonate
- Dissolved Sulfate
- Dissolved Sodium
- Total Organic Carbon

Ferrous iron will be added to the list of field parameters to be monitored. A field kit has been identified which will measure representative concentrations of ferrous iron at the time of sampling. Also, dissolved oxygen will be monitored using a down-hole device.

The following wells will be sampled during the Phase III RFI:

- UPRR Wells: MW-10, MW-11, MW-14, MW-32, MW-32D, SK-7D*,SK-8S*, SK-8D*and SK-9D*

- SK Facility Wells: HRI-03, RSC-1, SK-1S, SK-1D, SK-2S, SK-2D, SK-3S, SK-3D, SK-4S, SK-4D, SK-5S, SK-5D, SK-6S, SK-10S, SK-11S, SK-B68 and SK-B92*

* These wells will be sampled if installed during the Phase III investigation.

5. SCHEDULE AND REPORTING

The field investigation activities described herein will be initiated within four to six weeks following receipt of agency approval of the Work Plan, contingent upon the availability of the appropriate subcontractors. The work proposed for UPRR, the Coastal Derby Refinery, and City of Wichita property will clearly be contingent upon obtaining the appropriate access by the time the field effort begins. If access issues delay portions of the scope of work, then it may require multiple mobilizations to complete the work plan. The soil boring and monitoring well installation and the related sampling are anticipated to take approximately two weeks to complete.

As discussed in the Phase I RFI Work Plan submitted in October 1999, this RFI is being conducted in stages to assess the extent of impacts to soil and groundwater in an efficient and rational manner. The scope of work for each subsequent stage of the investigation relies on prior data obtained from earlier investigations. Cameron-Cole plans to include the data collected from the Phase III Work Plan in the RFI report, which is tentatively scheduled for completion in draft form in approximately January 2003. A revised RFI schedule is attached presented in Figure 9.

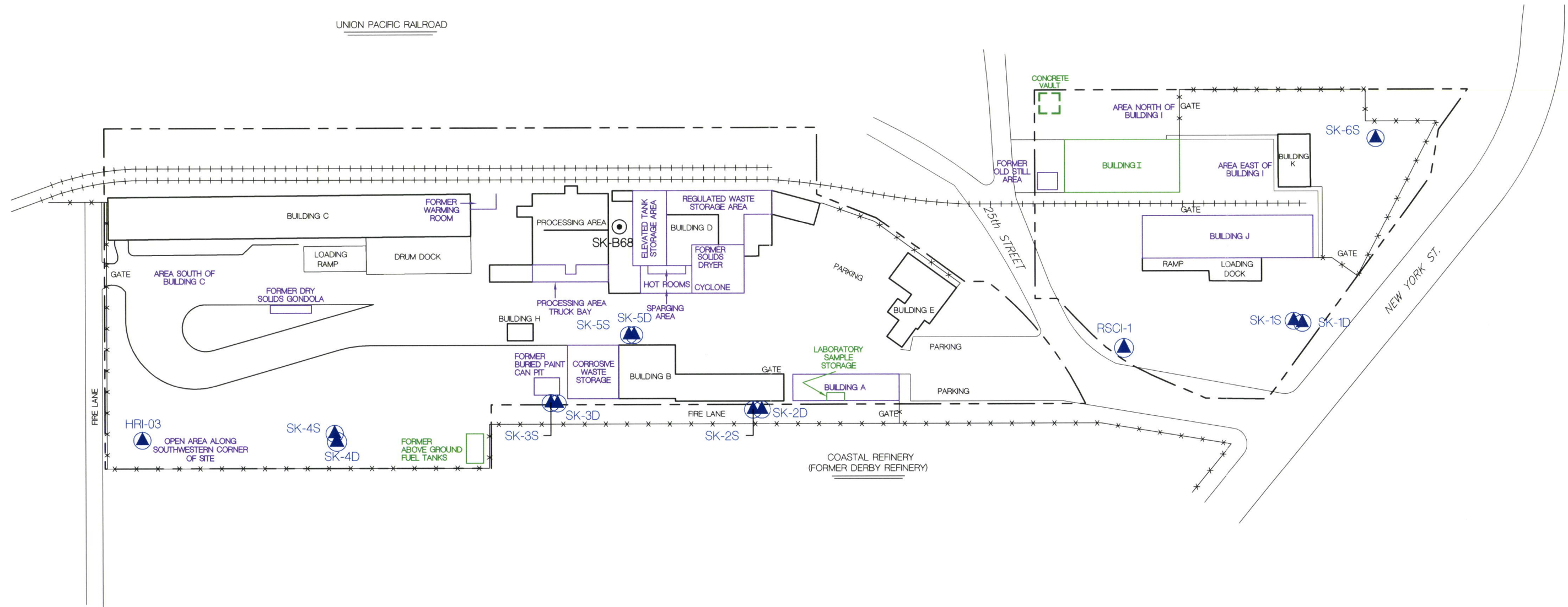
6. REFERENCES

- CDM 2000. *City of Wichita, North Industrial Corridor Site, Phase 1/1A Technical Memorandum. February 2000.*
- CDM 2001. *Draft – North Industrial Corridor Site March, 2001 Water Level Map and Data, (Memorandum with enclosures from CDM to the City of Wichita and the Kansas Department of Health and Environment, April 10, 2001.)*
- Environmental Decision Group, Inc. 1999. *RCRA Facility Investigation, Phase I Work Plan EPA Identification No. KSD007246846, Safety-Kleen (Wichita), Inc. Facility, 2549 North New York Avenue, Wichita, Kansas*
- Cameron-Cole, LLC, 2001. *RCRA Facility Investigation, Phase II Work Plan EPA Identification No. KSD007246846, Safety-Kleen (Wichita), Inc. Facility, 2549 North New York Avenue, Wichita, Kansas and associated Letter from Cameron-Cole, LLC dated October 15, 2001 amending the scope of work, and USEPA's letter dated November 6, 2001 amending the Revised Phase II RFI Work Plan*

Table 5
Sampling Details
Phase III RFI Work Plan
S-K Wichita Facility
Wichita, Kansas

Boring ID	Location Description	GeoProbe Soil Sampling				Geoprobe Groundwater Sampling		Surface Water
		SAMPLING DEPTH			ANALYSES	DEPTH	ANALYSES	ANALYSES
		<u>Surface Sample</u> 0 to 4 inches bgs	<u>Upper Sample</u> Sample with Highest OVM reading from boring [@]	<u>Lower Sample</u> Sample from bottom 2 ft. of deepest fine-grained unit in vadose zone	Volatile Organic Compounds	Upper 5 feet of Water Table	Volatile Organic Compounds	Volatile Organic Compounds
B-84	South of Building C Loading Ramp		X	X	XX	X	X	
B-85	South of Building C Loading Ramp		X	X	XX	X	X	
B-86	South of Building C Loading Ramp		X	X	XX	X	X	
B-87	Adjacent to Southern Property Boundary -- South of B-76		X	X	XX	X	X	
B-88	Adjacent to Southern Property Boundary -- South of B-76		X	X	XX	X	X	
B-89	Adjacent to Southern Property Boundary -- South of B-76		X	X	XX	X	X	
B-90	Between SK-4 and SK-3 well pairs		X		XX	X	XX	
B-91	Between SK-4 and SK-3 well pairs		X		XX	X	XX	
SK-B92	Near Former B-46, South of Building C Loading Ramp +							
B-93	East of Property -- Along New York St.		□	X	XX	X	XX	
B-94	East of Property -- Along New York St.		□	X	XX	X	XX	
B-95	East of Property -- Along New York St		□	X	XX	X	XX	
B-96	Near Southeast Corner of Building J Loading Dock		X	X	XX	X	XX	
B-97	North of Building A		X	X	XX	X	XX	
B-98	Southwest Corner of Facility, north of B-76	X	□	X	XX	X	XX	
B-99	Northeast Corner of Facility, north of B-70		X	X	XX	X	XX	
B-100	South of southeastern corner of Building J		X	X	XX	X	XX	
B-101	South of loading dock of Building J		X	X	XX	X	XX	
B-102	South of southwestern corner of Building J		X	X	XX	X	XX	
B-103	South of Building J		X	X	XX	X	XX	
B-104	Contingency Boring Near Building C Loading Ramp *		X	X	XX	X	X	
B-105	Contingency Boring Near Building C Loading Ramp *		X	X	XX	X	X	
B-106	Contingency Boring Near Building C Loading Ramp *		X	X	XX	X	X	
B-107	Contingency Boring Near Former B-76 *		X	X	XX	X	XX	
B-108	Contingency Boring Near Former B-76 *		X	X	XX	X	XX	
B-109	Contingency Boring Near Former B-76 *		X	X	XX	X	XX	
SK-SW-1	North of 21st Street -- East Fork Chisolm Creek							X
SK-SW-2	Southeast of Site -- East Fork Chisolm Creek							X
SK-SW-3	East of Southern Site Boundary -- East Fork Chisolm Creek							X
SK-SW-4	East of the Northeast Corner of the Site -- East Fork Chisolm Creek							X
SK-SW-5	Upgradient of the Site/ East of I-35 -- East Fork Chisolm Creek							X

Notes: XX denotes that only chlorinated VOCs will be reported by the laboratory for these samples
 * Final location to be determined during the field event based on observations and initial field findings.
 + Well will be sampled with other wells in the groundwater monitoring network for same analytical parameters.
 Samples to be analyzed for VOCs by USEPA SW 846 Method 8260B
[@] To be collected at depth less than that of "lower sample" (see next column)
 □ These samples will be collected from the upper 5 feet of fill material.



LEGEND

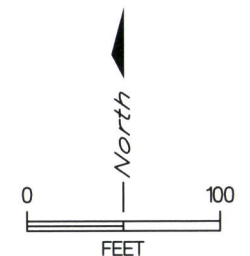
: SWMU Locations

: AOC Locations

GEOPROBE WELL LOCATION (1 in. ϕ)

MONITORING WELL LOCATIONS

NOTE: SURVEYED TO STATE PLANE COORDINATE SYSTEM



BY	DATE
DRAWN CJJ	7/16/02
CHECKED	
APPROVED	
APPROVED	
APPROVED	



CAMERON-COLE

SAFETY-KLEEN - (WICHITA) FACILITY

**FIGURE 2
SITE MAP**

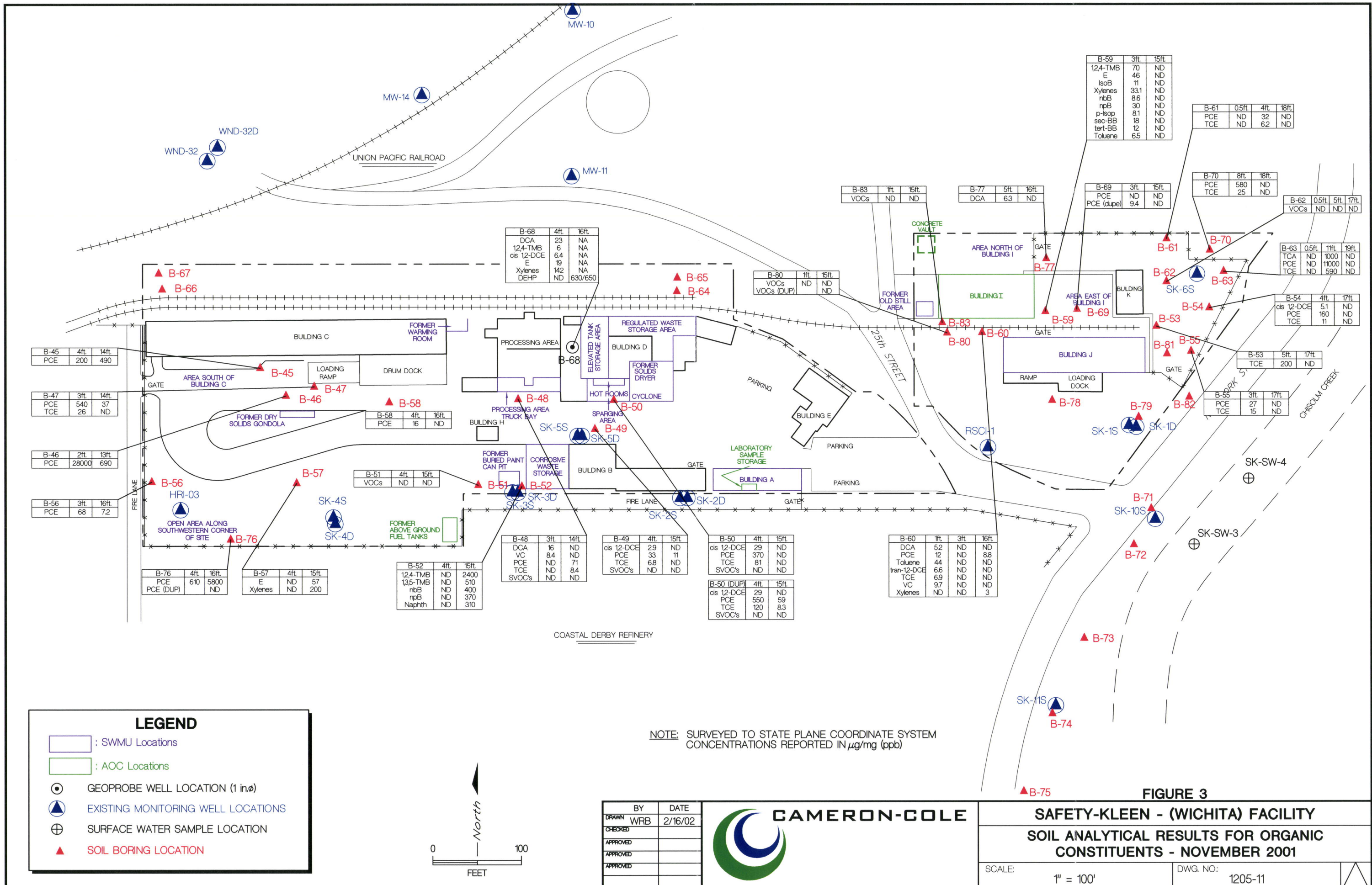
SCALE:

1" = 100'

DWG. NO.:

963231-0042





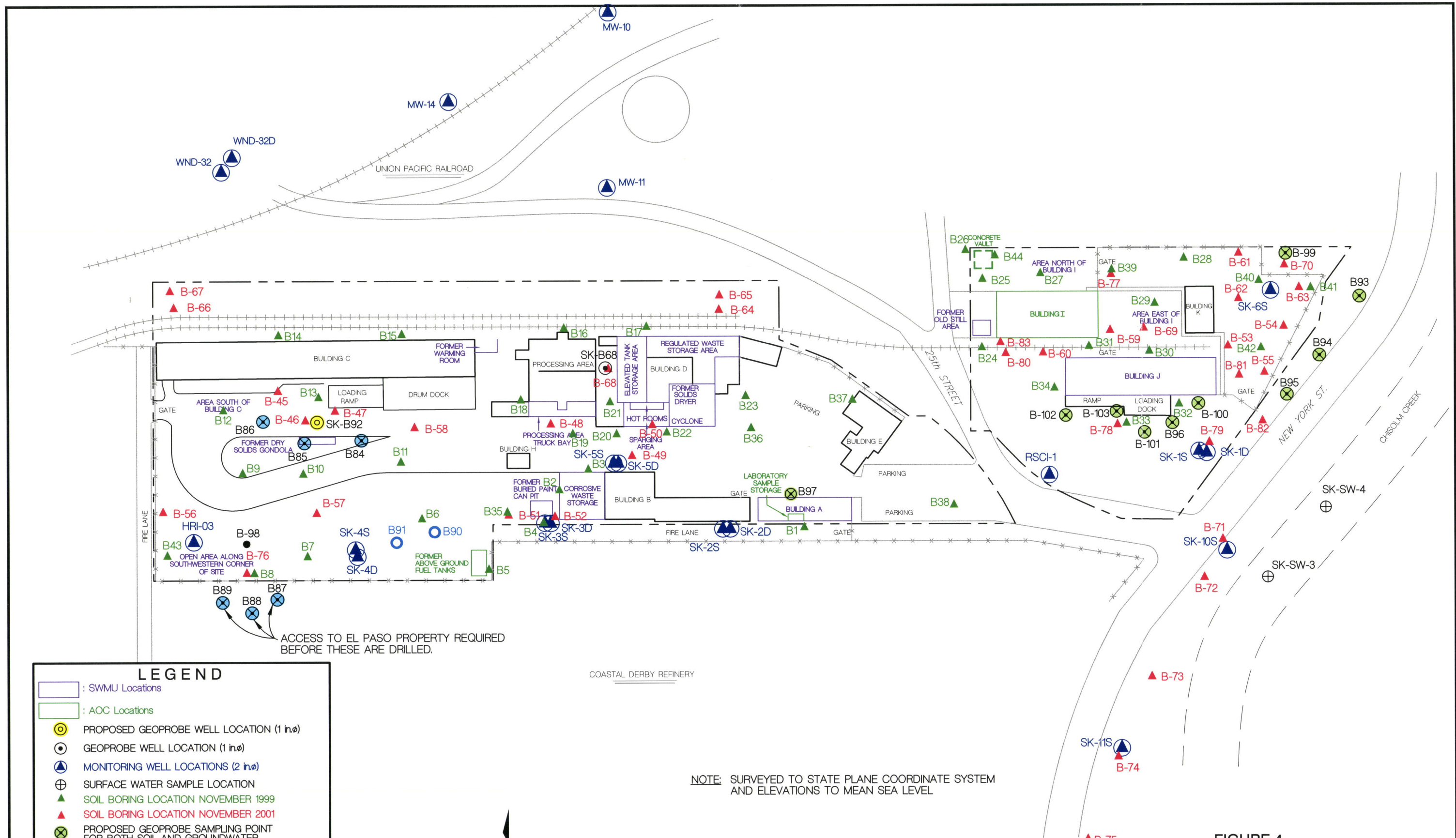
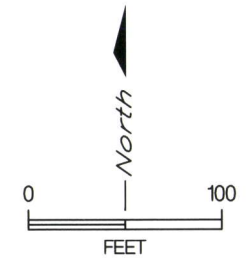


FIGURE 4

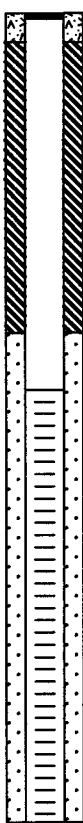
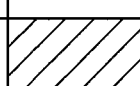
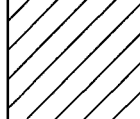
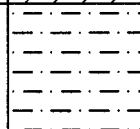
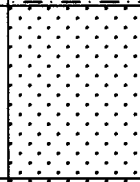
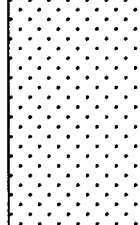

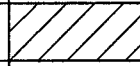
LEGEND

- : SWMU Locations
- : AOC Locations
- PROPOSED GEOPROBE WELL LOCATION (1 in.ø)
- GEOPROBE WELL LOCATION (1 in.ø)
- ▲ MONITORING WELL LOCATIONS (2 in.ø)
- ⊕ SURFACE WATER SAMPLE LOCATION
- ▲ SOIL BORING LOCATION NOVEMBER 1999
- ▲ SOIL BORING LOCATION NOVEMBER 2001
- ⊗ PROPOSED GEOPROBE SAMPLING POINT FOR BOTH SOIL AND GROUNDWATER
- PROPOSED GEOPROBE SAMPLING POINT FOR GROUNDWATER ONLY
- PROPOSED GEOPROBE SAMPLING POINT FOR SOIL COLLECTION ONLY
- ⊗ SAMPLES WILL BE COLLECTED EARLY IN FIELD PROGRAM AND FAST TURN AROUND TIME WILL BE REQUESTED TO DETERMINE NEED OF CONTINGENCY BORINGS



NOTE: SURVEYED TO STATE PLANE COORDINATE SYSTEM AND ELEVATIONS TO MEAN SEA LEVEL

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BY	DATE														
DRAWN WRB	7/15/02														
CHECKED															
APPROVED															
APPROVED															
APPROVED															
		SCALE: 1" = 100'	DWG. NO.: 1205-25												

CLIENT: <i>Safety-Kleen (Wichita), Inc.</i>				JOB NO.: <i>1205</i>		
PROJECT: <i>RFI Phase II Investigation</i>				LOCATION: <i>Wichita, Kansas</i>		
DRILLED BY: <i>Geotechnical Services</i>		DRILLER: <i>Steve Gensten</i>		METHOD: <i>H5A CME-45</i>		
START DATE: <i>11-9-01</i>		COMP. DATE: <i>11-9-01</i>		SURF. EL.:		TD: <i>32.0 FT. BGS</i>
LOGGED BY: <i>Philip Cavendor</i>			MEAS. PT ELEV.:		D. T. WATER: <i>18 FT. BGS</i>	
WELL DIAGRAM	DPT	DESCRIPTION	GRAPHIC LOG USCS CODE	OVM	SAMPLE ID	SAMPLE ANALYSIS
	0.0'-1.0'	Topsoll, silty clay, dark brown, 60% silt, 40% clay, dry, no odor, no stain.		CM	33.4	
	1.0'-7.5'	Clay, dark brown, 80% clay, stiff, non-plastic, dry, no odor, no stain.		CL		
	7.5'-12.0'	Clayey silt, light yellowish brown, 5% sand, very fine gravel, 70% silt, 25% clay, non-plastic, dry, no odor, no stain.		ML	4.2	
	12.0'-18.0'	Sandy silt, light yellow brown, 65% sand (very fine gravel to medium), 30% silt, 5% clay, dry, no odor, no stain.		SM	11.6	
	18.0'-26.0'	Poorly graded sand, yellow brown, 85% sand (very fine to coarse), rounded to sub-rounded quartz, 15% silt, wet at approximately 10 feet, no odor, no stain. Poorly graded sand coarsening to poorly graded gravel		SP	17.1	
	26.0'-30.0'	Poorly graded gravel with sand, yellowish brown, 70% gravel (fine to medium), 35% sand (very fine to coarse), 5% silt, wet, no odor, no stain.		GP	9.4	
	30.0'-32.0'	Clay, brown, 100% clay, plastic, moist, no odor, no stain.		CL	9.6	
	32.0'	Total Depth = 32.0 feet Set well at 28' 15' 10-slot screen 13' PVC riser 8 bags 50# Ogleby 12-20 silica sand 2 bags hole plug bentonite 1 end cap 3" 1 8"x12" surface well monument Pulled up well for natural backfill of sand and gravel at 28'.				

CLIENT: <i>Safety-Kleen (Wichita), Inc.</i>				JOB NO.: <i>1205</i>		
PROJECT: <i>RFI Phase II Investigation</i>				LOCATION: <i>Wichita, Kansas</i>		
DRILLED BY: <i>EPS</i>		DRILLER: <i>Steve Gensten</i>		METHOD: <i>Geotechnical Service</i>		
START DATE: <i>11-9-01</i>		COMP. DATE: <i>11-9-01</i>		SURF. EL.: <i>1313</i>		TD: <i>35.0 FT. BGS</i>
LOGGED BY: <i>Philip Cavendor</i>			MEAS. PT ELEV.:		D. T. WATER: <i>FT. BGS</i>	

WELL DIAGRAM	DPT	DESCRIPTION	GRAPHIC LOG USCS CODE	OVM	SAMPLE ID	SAMPLE ANALYSIS
	0.0'	0.0'-3.0' Clayey silt, dark brown to brown, 65% silt, 35% clay, low plasticity, high strength, dry, no odor, no stain.	CL/ML	0.0		
	5	3.0'-7.5' Lean clay, brown, medium plasticity, minor silt, no odor, no stain.	CL	0.2		
	10	7.5'-14.0' Lean clay, dark grayish brown, medium plasticity, medium strength, dry, no odor, no stain.	CL	0.0		
	15	14.0'-15.0' Lean clay, dark grayish brown, medium plasticity, medium strength, dry, no odor, no stain.	CL	3.1		
		15.0'-16.0' Silty sand, very dark gray, 65% sand (very fine to coarse), 35% silt, moist, no odor, no stain.	SM	5.0		
	20	16.0'-19.0' Silty sand, very dark gray, 65% sand (very fine to coarse), minor 3"-4" silt layers, no odor, no stain.	SP	7.0		
		19.0'-24.0' Poorly graded sand, very dark gray to yellow brown, very fine to coarse gravel, 25% sand, 65% silt, wet, no odor, no stain. Minor rounded to sub-rounded gravel (22mm).	GP	14.2		
	25	24.0'-27.0' Poorly graded gravel with sand, yellowish brown, 50% gravel (very fine to medium), rounded to sub-rounded, 40% sand (very fine to very coarse), 10% silt, wet, no odor, no stain.	SP	4.5		
	30	27.0'-33.5' Poorly graded sand, yellowish brown, 75% sand (very fine to very coarse), rounded to sub-rounded, quartz and feldspar grains, 15% silt, wet, no odor, no stain.	CL	13.8		
	35	33.5'-35.0' Olive gray clay, 80% clay, stiff, 20% silt, moist, no odor, no stain.		8.6		
40	<p>Total Depth = 35.0 feet</p> <p>End cap 2.5"</p> <p>10-slot PVC screen 35-30</p> <p>2 sacks sand pack added (heaving sands prevented adding sand pack) gravel screen, filter pack added to 24'</p>					
45	<p>8 bags hold plug bentonite 24'-26'</p> <p>55 gallons of water added to prevent heaving sands</p> <p>Pumped 145 gallons during development</p>					

Bedrock

CLIENT: <i>Safety-Kleen (Wichita), Inc.</i>				JOB NO.: <i>1205</i>		
PROJECT: <i>RFI Phase II Investigation</i>				LOCATION: <i>Wichita, Kansas</i>		
DRILLED BY: <i>EPS</i>		DRILLER: <i>Pat Martin</i>		METHOD: <i>Geo Probe</i>		
START DATE: <i>11-7-01</i>		COMP. DATE: <i>11-7-01</i>		SURF. EL.:		TD: <i>20.0 FT. BGS</i>
LOGGED BY: <i>JAN</i>		MEAS. PT ELEV.:		D. T. WATER: <i>19 FT. BGS</i>		

WELL DIAGRAM	DPT	DESCRIPTION	GRAPHIC LOG USCS CODE	OVM	SAMPLE ID	SAMPLE ANALYSIS
		0.0'-4.0' Silty sand with gravel, light brown (10YR6/3), gravel 15% (fine), sand 60%, silt 25%, moist, no stain, odor.		Fill	223 @ 4'	
	5	4.0'-8.0' Silty clay, dark brown (10YR4/4), silt 10%, clay 90%, stiff, moist, no stain, no odor.		ML/CL	7.4	B-53-5 0815
		8.0'-11.0' Silty clay, brown (7.5YR5/2), silt 35%, clay 65%, moist, no stain, no odor.		ML/CL	13.7	
	10	11.0'-12.0' Sand, pale yellow (2.5YR7/3), sand 100% (fine), moist, no stain, no odor.		SP	NA	
		12.0'-16.0' Pushed cobble, no recovery.				
	15	16.0'-19.0' Sand, pale yellow (2.5Y7/3), sand 100% (fine to coarse), wet, no stain, odor in saturated zone.		SP	3.2	B-53-17 0845
	20	19.0'-20.0' Gravelly sand, dark gray (7.5YRN4), sand 80% (fine to coarse), gravel 20% (fine), wet, no stain, odor.		SW	4.0	
	Total Depth = 20.0 feet					
	25					
	30					
	35					

CLIENT: <i>Safety-Kleen (Wichita), Inc.</i>				JOB NO.: <i>1205</i>		
PROJECT: <i>RFI Phase II Investigation</i>				LOCATION: <i>Wichita, Kansas</i>		
DRILLED BY: <i>Geotechnical Services</i>		DRILLER: <i>Steve Gensler</i>		METHOD:		
START DATE: <i>11-9-01</i>		COMP. DATE: <i>11-9-01</i>		SURF. EL.:		TD: <i>25.0 FT. BGS</i>
LOGGED BY: <i>Philip Cavendor</i>			MEAS. PT ELEV.:		D. T. WATER: <i>18.5 FT. BGS</i>	

WELL DIAGRAM	DPT	DESCRIPTION	GRAPHIC LOG USCS CODE	OVM	SAMPLE ID	SAMPLE ANALYSIS
		0.0'-1.0' Topsoil - dark brown, silty clay, dry, no odor, no stain.	ML			
		1.0'-4.0' Sandy silt with clay, dark brown, 25% sand (very fine), 60% silt, 15% clay, dry, no odor, no stain.	ML	1.9		
	5	4.0'-7.5' Clay, dark green, 70% clay, 25% silt, 5% sand (very fine), firm, low plasticity, no odor, no stain, dry.	ML	7.4		
	10	7.5'-15.5' Sandy silt, light yellowish brown, 60% sand (very fine grain), micaceas, 30% silt, 10% clay, dry, loose, no odor, no stain.	SM	5.5		
	15	15.5'-23.5' Poorly graded sand, yellowish brown, 90% sand (very fine grain), 10% silt, dry, no odor, no stain. Becomes fine to coarse sand at 18.0	SP	13.4 15.2		
	25	23.5'-25.0' Poorly graded gravel with sand, 70% gravel (fine to medium), sub-rounded to rounded, quartz and feldspar grains, 25% sand (very fine to coarse), 5% silt, wet, no odor, no stain.	GP	4.8		
	30	Total Depth = 25.0 feet 15' PVC screen 25-10 8 sacks of 12-20 silica sand 2 sacks of hole plug bentonite 1 3" long PVC threaded end cap 1 T-plug 1 8" dia x 12" deep surface well monument				